## Menlo Park Notebook #184 [N-80-06-16.1]

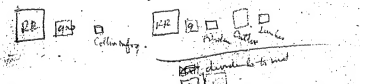
This is one of six notebooks that were probably begun on January 10, 1881. It is a draft of a proposed book by Edison to promote his system of electric light and power distribution as a replacement for gas lighting. (See also Menlo Park Notebooks #187-#191.) The label on the front cover is marked "Prospectus Book." The spine is stamped "Edison's Prospectus Book." The book contains 284 numbered pages.

Blank pages not filmed: 18-19, 32-39, 58-145, 148-163, 166-175, 178-187, 190-197, 200-201, 204-213, 216-219, 222-225, 228-235, 238-249, 252-267, 270-273, 276-281.

# Electricity vs Gas as general illuminants

The gas interest of the world.
Early history adverse opinion
scientific men, its gradual rise
to be one largest industry in the
world, to illustrate its magnitude as
compared other industries

gross receipts




Money invested in the U.S. Eng
the Continent, & Gal. wood - favorite
illuminant -

Defects as Domestic illuminant - but
inexpensive over other combustion methods
Danger = great cost piping house - leakage
Suffocation (get statistics) defects, burner
rapid deterioration. Effects of eye. Effect
~~unequally~~ unsteady illumination

Object E to Effect exact imitation
of all done by ~~[illegible]~~ gas. so as explain
lighting by gas by lighting

by Electricity

to improve the illumination to such an Extent as to meet all the requirements of Natural Artificial & Commercial Condition

A general system of distribution only possible (to meet requisite general illumination) by Electric distribution as it goes to distribution of gas and water —

The accomplishment & perfection of a general system its readiness for introduction only awaiting business men of Energy & Capital

as contrasted illumination in Mills etc. [illegible]
limits of gas distribution of cities, expensive illumination
for adulterations [illegible] of which a small
gas unlighted illuminating power is [illegible] when
[illegible] people shall know the distribution of the [illegible]

The Creation of a new industry
opening a wide field for
profitable investment of Capital.

Its only effect on gas investment
being to gradually cause the
present gas interest to cease, the
manufacture of illuminating
gas & go into the manufacture &
distribution of heating gas
The advantages of heating
gas - its cheapness, the market
that could & would be created
the effect being to not only
not effect the enormous amount

interest of gas to actually increase ~~to the value~~ capacity of earning.

Table showing amount used in Ms yearly in principal cities world - What its sold for. the money expended per M. Sold. Costs in hacks. Cost distributed.

List gas Cos in U.S. small type Capital = Elc.

Difficulty getting any reliable statistics.

Give statistics of every kind as obtained in our district

In connection with these statistics mention previous use kerosene; give its costs as against gas,

(

Capability of replacing gas illumination by electric illumination in every particular

General description of the system

give Estimates both Cost of plant - Operating Expenses in large cities = with smaller cities - also where Water power alone - also where Water power part time with steam plant Cases necessarily -

Depreciation of Electric plant VS gas plant :-

Further Connection allow gas depreciation from their own deputy + ours from Use of Otters Engines.

Give all tests at Menlo park

Map –

Industrial tests – dry Engineer

Coal tests

Photometric tests – different Computations

Life of lamp tests, ~~diff~~

Dynamo Efficiency tests Clark – Uthe – Young & Rowland also Young & Eckert with Pope

Estimates Experiments reports by upon by several good Engineers

Critical Review of the whole thing as worked upon upon pure science principles by Rowland – Young – Trowbridge.

also Rowland on the possibilities & probabilities of cheaper production by better manufacture higher incandescence without decrease life of lamp

~~Cheap~~

~~Cheap~~

Cheap wires small expense wires allowing poor to use it

1 jet will pay – as one jet of 16 candles can be subdivided without loss of economy into 2 of 8 or 4 of 4 candles

this Especially desirable for the poor

The transmission of power
The RR at Niagara & the Shops
The Costs - The general
distribution of power & light.
How that is done & with if
Elec is used for light or
power - its peculiar advantages
its subdivision into small
powers with economy - The
small indication of N.Y. & the
present way getting small
power. Cost & inconvenience
Extra Rents.

Availability of Electric Motors -
Measuring aggregated work
on motors = usable input or
day - ~~[illegible]~~
~~[illegible]~~
Measurement of small steam
motors = ~~First Cost~~ gas motors,
their Complication -
Domestic Motors Manufactures
Cuts & description of these
The graphs derived from the
Sale of power independent
of light - gas table

lessened cost of flight
when power sold
give tables when various
amounts of flight + power
sold

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Storage necessary - instances
water works - Ocean steam
probabilities with 12 Engine
+ boiler 8000 —

Statistics of power in our district —

generally poorest districts for light best for power; thus Evening up whole city = the Effect of the measurement

Effect of distribution sale small powers well be to create immense amount of small induction

Previous inventors failed -
necessitiee for commercial
success a accomplishment by E.
E great effort not to make a huge light
or a blinding light, but a small one
giving the maximum of gas
Speak of arc lighting ~~[illegible]~~
~~[illegible]~~ the
entirely distinct field large
areas, ~~[illegible]~~
~~[illegible]~~
~~[illegible]~~

E & Co. Had the system by
broad patents - guard & other
application patents - patents
allowed & claims -
unassailable by any prior
publication & claims so

for allowed — Opinions as to validity in Court of the patents = opinions well known men — (negative Evidence — Preece, Morton others)

Specifications of large works contemplated for manufacture lamps — The Capability to increase output, it being now understood necessarily probability of lamps improved ~~[illegible]~~ & diminished price, both tending to allow of the sale of illumination more cheaply to public

Curve field magnet 3 sizes on same plat - also iron + copper investment + labor - also Energy line - 10 pc minutes!

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Curve Energy (1*) (ft lbs Candle power + Emf of A BC + other lamps obtained) Candle by Candle experiment - Up to Curve now made with Gd. lamp - also the Curve with different incandescence

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Ditto Motors -

Curves Motor transfer power on generator distributing system - also in rock ability Case

Graphic representation consumption gas going to Dec — also a curve showing average daily consumption each month of year — one card showing 1 day in June 1 in going —

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Table fall EMF formula —

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Laws relating to ft lb — unit incandescence —

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Curve life lamps at diff't EMF — also diff'rent incandescence

Curve Rise ~~Conductivity~~ in Cu
Saturation meter =

all other tables for meter

---

Table weight Copper required diffent
distance 100 ohm lamp 16
candles.

---

Increased consumption as you go
outwardly from station - Show
map then make Copper table
Showing increased needed
in Copper as you extend area
illumination

Show graphically by circles illumination by 1 light of 10 gas jets + 10 of 1 gas jet. Its gain

Loss by subdivision gas (13). Smaller amount gas dont give proportionate illumination

Represent loss fts lb in Dynamo & Lamp from 1 to 1 to 30 to 1. Giving graphic curve shows gain ~~[illegible]~~ Energy its cost ~~[illegible]~~ to allow extra investment to allow the economy. 10 p.c. interest.

Represent relative Costs different Illuminants by blocks or ~~[illegible]~~ lines one dollar will buy

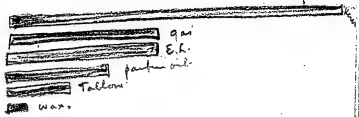



Table Costs Motors

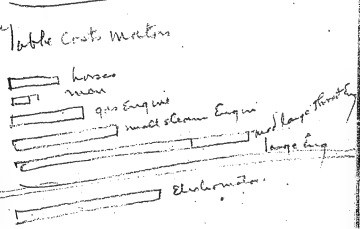


Table with Curves showing increased economy by larger Engine higher power

starting 1/4 hp Eng.

Ditto E Motor.

Table relative gas consumed from pilot ~~[illegible]~~

~~[illegible]~~

in figures

Table cost lighting store 50 Kerosene lamps - labor-wick Chimney - Candle power

ditto & Comparison gas also consumed required

Depreciation

Compulsion
Size of conductor ~~[illegible]~~ in 9a, 9b & 9c
" Supply same areas in Colny

£b 9a - Relative Cost.

£b 9a

Yearly depreciation

£ 9a

Value if disused & sold in market.

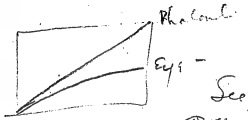
£b. 9a

Relative size in house

£b 9a - Cost.

Curve actual drop could be found obtained by experiment. 14 machines, 25 lamps on then 1 on. also gradually from 25 down — same of ~~[illegible]~~ machine Res reduced 1/2 keeping EMF same, —

Photometers approachable. Curve of decrease remarkably of eye to measure illumination




See Optics
Photometry

speaking of 9ll by E.
Coal Trade journal of June 16 1880.
says that the application of gas to
Heating Cooking etc would still
return handsome dividends to
the shareholders Even if ~~of~~ ~~[illegible]~~ of
Illumination by it was wholly superseded
by Electricity

So unpleasant to the effects of the
products of the Combustion of
gas that the new Medium
Square Thread Every gas jet to
Ventilated by special Tubes to
Carry away the products of
Combustion

Opposition to Bessemer -
"Steel by grams - page 54 -

Candle power Paris gas 12 candles.
Vide Haywoods report on Holborn
Viaduct. annual G.L. April 1879

Ann Jul gaol - May 16/79

McCormicks report.

gas act (English) of 1875 limits
Sulphur Compounds to 30 grains
per 100 cf ammonia 5 grains
Actual results last few months
of Lecture, Sulphur 28, ammonia
0.47. Capland Lecture in
Bd of Lighting April 29 1879

Cost working gas engine, attendance
Cost plant etc amm gas & gal
sept 16 1880

April 29 1879 Jnl of good British
Lecture by C. Copland, M Inst CE
Late Supt to Engr Brunlt & Queenlight Co of Hull,
stated. Total mileage of in works British
over £300,000,000.

See Quotation from Engineering
in Coal trade Jnl Mch 79-

Precious Location Exploration
United Sources Inclusive - See
Electrician July 22/79 - try
get original - general policy 1d A.

Latimer Clark - Electrician
Mch 15 1879-

Precious Mattenheil assay in E&
Phil Mag Jany 1879 - page
29 =

1 Cent 3 mills per 1000 feet
was expense of management
of London Co 1879 —

See Goodwin's statement: expense of
Economy Coal vs Gas: Cooking
Ann Gas Gas - Apl 2. 1880
in proceedings gas assn -

The state inspector gas slide mass
funds upon investigation found that
the average Error of all the meters
about which the complaints were made
was 64/100 of 1 per cent against
the consumer. get Ann gas light
Jul March 6 1880. Contain
Hinmans full report

Water gas

gas in press room Quebec Chronicle exploded
loss $1000. Feby/80

Chicago Fireman Patrol for 2 months ending
Dec 31 found 217 bad drops with
unsafe gas brackets =

Deaths several accounts.
see fein =
ann g L gnl Nov 16, 1880.

Municipality Report Pains Cost
Gas & Electric Light. Engineering
Jany 31 1879

Analyses of the Metropolitan Gas Cos accounts by Mr Field for 1879.

Complete set Amer pub gas lighting
" " British
" " French.

Fontaine's Book -

Haywoods Report on result of lighting Holborn Viaduct,

Also report Costs on Thames Embankment

~~Smiles lives of the Engineers~~

= Brush article in Van Nostrand

Poors Manual of Railroads -

Life of Hetherington by Saml Smiles.



J Francis, History English Railways ordered to have

Transactions of the British Assn of gas Managers fuell setting forth G.C. -

Price £ 20 defective · 176